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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,283	06/21/2006	Yasunori Hatamura	27821US6YAPCT	2461
22850	7590	03/22/2010	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			ZERVIGON, RUDY	
			ART UNIT	PAPER NUMBER
			1792	
			NOTIFICATION DATE	DELIVERY MODE
			03/22/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/549,283	HATAMURA ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 21-31 is/are pending in the application.
- 4a) Of the above claim(s) 30 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/10/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 18, 2010 has been entered.

2. Newly submitted claims 30 and 31 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination (AB_{Br}) as claimed does not require the particulars of the subcombination (B_{Sp}) as claimed because the combination does not require that the focus ring and secondary focus rings have configurations as claimed in claim 1. The subcombination has separate utility such as securing articles other than substrates.

The examiner has required restriction between combination and subcombination inventions. Where applicant elects a subcombination, and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable

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in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 30 and 31 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-5, 7-10, and 21-28 are rejected under 35 U.S.C. 102(a,e) as being anticipated by Schneider; Gerhard M. et al. (US 6364957 B1). Schneider teaches a focus ring assembly (130; Figure 3, 11; column 8; lines 45-67) comprising: a focus ring (290; Figure 3, 11; column 8; lines 45-67) including a step receiving surface (290/215 interface; Figure 11), the focus ring (290; Figure 3, 11; column 8; lines 45-67) being positioned on a substrate holder (245; Figure 11) and located below a backside surface of a substrate (15; Figure 11), and an outer radial lip surface (outermost radial position of 290; Figure 8) positioned radially outward from a peripheral edge (see below intended use arguments) of the substrate (15; Figure 11),; and a secondary focus ring (282; Figure 11) positioned on the step receiving surface (290/215 interface; Figure 11) of the focus ring (290; Figure 3, 11; column 8; lines 45-67), the secondary focus ring (282; Figure 11) including an inner radial edge surface (innermost radial edge of 282) positioned radially outward (see intended use position) from the peripheral edge of the substrate (15; Figure 11), wherein

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said focus ring (290; Figure 3, 11; column 8; lines 45-67) is configured to couple to the focus ring assembly (130; Figure 11) which is configured to support the substrate (15; Figure 3) exposed to a process in a processing system (Figure 3), and said secondary focus ring (282; Figure 11) is configured to reduce deposition of material (column 9, lines 5-19) from said process on the backside surface of said substrate (column 8; line 37), as claimed by claim 1. Applicant's amended claim requirements of "the secondary focus ring including an inner radial edge surface *positioned radially outward from the peripheral edge of the substrate* " and "positioned radially outward from a peripheral edge of the substrate" are intended use claim requirements in the pending apparatus claims depending on the size (diameter) of the substrate 15 used. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

With respect to Applicant's claim requirements of "said secondary focus ring is configured to reduce deposition of material from said process on the backside surface of said substrate", when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Schneider further teaches:

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- i. The focus ring assembly (Figure 11) as recited in claim 1, wherein said secondary focus ring (282; Figure 11) comprises a compliant material (column 9, lines 5-19), as claimed by claim 2
- ii. The focus ring assembly (Figure 11) as recited in claim 2, wherein said compliant material (column 9, lines 5-19) comprises at least one of silicone rubber, polyimide, and Teflon, as claimed by claim 3
- iii. The focus ring assembly (Figure 11) as recited in claim 1, wherein said secondary focus ring (282; Figure 11) comprises a rigid material (column 9, lines 5-19), as claimed by claim 4
- iv. The focus ring assembly (Figure 11) as recited in claim 4, wherein said rigid material (column 9, lines 5-19) comprises at least one of a ceramic material (column 9, lines 5-19), silicon, silicon carbide, silicon nitride, silicon dioxide, carbon, sapphire, and alumina, as claimed by claim 5
- v. The focus ring assembly (Figure 11) as recited in claim 1, wherein a clearance space is formed between said substrate (15; Figure 3) and said focus ring (290; Figure 3, 11; column 8; lines 45-67), and said clearance space exposes at least a portion of said backside surface on said substrate (15; Figure 3) and said secondary focus ring (282; Figure 11) reduces said clearance space – Figure 6, as claimed by claim 7. However, Applicant's claim requirements are believed to be claim requirements of intended use in the pending apparatus claims. Applicant's claim requirements hinge on the dimension(s) of the substrate *used*. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a

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claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- vi. The focus ring assembly (Figure 11) as recited in claim 7, wherein said secondary focus ring (282; Figure 11) reduces exposure of said backside surface (column 8; line 37), as claimed by claim 8. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).
- vii. The focus ring assembly (Figure 11) as recited in claim 1, wherein a portion (15-290/282/245 gap) of said backside surface on said substrate (15; Figure 3) is exposed and wherein said secondary focus ring (282; Figure 11) reduces said exposure of said backside surface (column 8; line 37), as claimed by claim 9. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).
- viii. The focus ring assembly (Figure 11) as recited in claim 1, wherein said secondary focus ring (282; Figure 11) makes contact with said substrate (15; Figure 3) and makes contact with said focus ring (290; Figure 3, 11; column 8; lines 45-67), as claimed by claim 10.

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- ix. The focus ring assembly (Figure 11) as recited in claim 1, wherein the outer radial lip surface (outermost radial position of 290; Figure 8) of the focus ring (290; Figure 3, 11; column 8; lines 45-67) is positioned radially outward from an outer radial edge surface (innermost radial edge of 282) of the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67), as claimed by claim 21
- x. The focus ring assembly (Figure 11) as recited in claim 1, wherein the outer radial lip surface (innermost radial edge of 290) of the focus ring (290; Figure 3, 11; column 8; lines 45-67) is positioned radially outward from and in contact with an outer radial edge surface of the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67), as claimed by claim 22
- xi. The focus ring assembly (Figure 11) as recited in claim 1, wherein the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67) has an annular shape and a cross-section of the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67) has a rectangular shape, as claimed by claim 23
- xii. The focus ring assembly (Figure 11) as recited in claim 1, wherein the focus ring (290; Figure 3, 11; column 8; lines 45-67) has an annular shape and a cross-section of the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67) has an L-shape, as claimed by claim 24
- xiii. The focus ring assembly (Figure 11) as recited in claim 1, wherein the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67) is positioned entirely radially outward from the substrate, as claimed by claim 25 – depends on size of substrate, as claimed by claim 25

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- xiv. The focus ring assembly (Figure 11) as recited in claim 1, wherein the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67) includes an upper surface that is substantially planar with a top surface of the substrate, as claimed by claim 26
- xv. The focus ring assembly (Figure 11) as recited in claim 26, wherein the focus ring (290; Figure 3, 11; column 8; lines 45-67) includes an upper surface that is substantially planar with the upper surface of the secondary focus ring (282; Figure 3, 11; column 8; lines 45-67) and the top surface of the substrate, as claimed by claim 27
- xvi. The focus ring assembly (130; Figure 3, 11; column 8; lines 45-67) as recited in claim 1, wherein the entire secondary focus ring (282; Figure 11) is positioned radially inside of the outer radial lip surface of the focus ring (290; Figure 3, 11; column 8; lines 45-67), as claimed by claim 28

Claim Rejections - 35 USC § 103

- 5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
- 6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider; Gerhard M. et al. (US 6364957 B1) in view of Wicker; Thomas E. et al. (US 6464843 B1). Schneider is discussed above. Schneider does not teach that the focus ring assembly (Figure 11) as recited in claim 1, wherein said secondary focus ring (282; Figure 11) comprises silicon having a resistivity less than or equal to $1\ \Omega\text{-cm}$. Wicker teaches a plasma processing system (Figure 1) employing focus rings with resistivities of below $200\ \Omega\text{-cm}$ (column 6; lines 50-65).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made for Schneider to use materials with resistivities of below $200\Omega\text{-cm}$ as taught by Wicker.

Motivation for Schneider to use materials with resistivities of below $200\Omega\text{-cm}$ as taught by Wicker is for reducing particle contamination in the processed wafer as taught by Wicker (column 6, lines 1-15).

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider; Gerhard M. et al. (US 6364957 B1) in view of Ke; Kuang-Han et al. (US 6284093 B1). Schneider is discussed above. Schneider does not teach that the focus ring assembly (130; Figure 3, 11; column 8; lines 45-67) as recited in claim 1, wherein the focus ring (290; Figure 3, 11; column 8; lines 45-67) *extends further radially inward than the secondary focus ring* (282; Figure 11), as claimed by claim 29.

Ke teaches a focus ring assembly in Figures 5,6 such that the the focus ring (30; Figure 5,6) *extends further radially inward than the secondary focus ring* (58; Figure 5,6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Schneider to optimize the length of Schneider's focus ring (290; Figure 3, 11; column 8; lines 45-67) as taught by Ke.

Motivation for Schneider to optimize the length of Schneider's focus ring (290; Figure 3, 11; column 8; lines 45-67) as taught by Ke is for added support or to meet dimensional requirements to position the substrate as desired.

Response to Arguments

8. Applicant's arguments filed January 22, 2010 have been fully considered but they are not persuasive.

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Applicant states:

“

Claim 1 is hereby amended to clarify that the step receiving surface, on which the secondary focus ring is positioned, is part of the focus ring, not the substrate holder. An exemplary embodiment of such a step receiving surface is shown in Figure 4 as reference numeral 264. The Office Action, in section 2 on page 2, equates the outer ring 290 and shoulder 215 of the substrate holder 38 shown in Figure 11 of Schneider to the claimed "focus ring including a step receiving surface."

However, as can be seen in Figure 11 of Schneider, the shoulder 215 is part of the substrate holder 38, not the outer ring 290. Further, the inner ring 282 is not positioned on the outer ring 290

“

In response, the Examiner has reviewed his grounds of rejection in the context of the above arguments and amendments and reproduces his findings: "...a focus ring (290; Figure 3, 11; column 8; lines 45-67) including a step receiving surface (290/215 interface; Figure 11), the focus ring (290; Figure 3, 11; column 8; lines 45-67) being positioned on a substrate holder (245; Figure 11) and located below a backside surface of a substrate (15; Figure 11)...". As such , the Examiner believes that Applicant's amendment still has not distinguished from Schneider in a manner to remove the anticipation rejection proposed above.

Applicant states:

“

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Claim 1 recites a focus ring including "an outer radial lip surface positioned radially outward from a peripheral edge of the substrate." Claim 1 also recites a secondary focus ring including "an inner radial edge surface positioned radially outward from the peripheral edge of the substrate." The Office Action states that these are "intended use requirements in the pending apparatus claims dependent on the size (diameter) of the substrate 15 used." Applicants respectfully disagree because these claims define the positioning of the focus ring and secondary focus ring regardless of the size of the substrate. Accordingly, whether the substrate has a large or small diameter, the claims define the same positioning of the focus ring and secondary focus ring that must be met to be covered by the claims.

“

In response, the Examiner disagrees and maintains his position. Indeed Applicant's above quoted context specifically recite structural features *relative* to the “peripheral edge of the substrate”. As stated prior, the “peripheral edge of the substrate” is subject to the *diameter* of the desired substrate to be processed thus demonstrating the intended use of Applicant's and Schneider's apparatus.

Applicant states:

“

However, it is respectfully submitted that Schneider does not disclose or suggest "a secondary focus ring positioned on the step receiving surface of the focus ring, the secondary focus ring including an inner radial edge surface positioned radially outward from the peripheral edge of the substrate," as recited in amended Claim 1

“

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In response, the Examiner has again reconsidered his grounds of rejection in context: "...a secondary focus ring (282; Figure 11) positioned on the step receiving surface (290/215 interface; Figure 11) of the focus ring (290; Figure 3, 11; column 8; lines 45-67), the secondary focus ring (282; Figure 11) including an inner radial edge surface (innermost radial edge of 282) positioned radially outward (see intended use position) from the peripheral edge of the substrate (15; Figure 11)...". Further, taking into consideration that the substrate 15 can be of any desired diameter, the claimed feature that requires "inner radial edge surface *positioned radially outward from the peripheral edge of the substrate*" is thus emphasized.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 6pm EST. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272- 1435.

/Rudy Zervigon/

Primary Examiner, Art Unit 1792